Preface

First IAEA Technical Meeting on
Fusion Data Processing, Validation, and Analysis

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I had the privilege and the great pleasure to serve as the chair of the First International Atomic Energy Agency (IAEA) Technical Meeting (TM) on Fusion Data Processing, Validation, and Analysis (IAEA-TM), held in Nice, France, June 1–3, 2015, at the Chateau de Valrose. For this first IAEA-TM, we welcomed approximately 80 participants and researchers from all over the world.

The local arrangements were ably carried out by the French Alternative Energies and Atomic Energy Commission (CEA) through the Institute for Magnetic Fusion Research (IRFM), Cadarache, France. I would like to take the opportunity to thank all those who contributed to the success of this first IAEA-TM, in particular, Stéphanie Sanchez, Sylvie Gibert, Jacqueline Signoret, and Thierry Hutter. My wishes also extend to the members of the standing International Physics Advisory Committee. Finally, I address special thanks to Sehila Gonzalez, scientific IAEA secretary, who helped with great efficiency and kindness to make this event a success.

The technical program was arranged by Andreas Dinklage (Germany), Rainer Fischer (Germany), Didier Mazon (France), Darren McDonald (United Kingdom), Andrea Murari (Italy/United Kingdom), Jesús Vega (Spain), Jean-Marie Noterdaeme (Belgium), Yasunori Kawano (Japan), and Nathan Howard (United States).

This first IAEA-TM was in fact the logical follow-up to many previous biennial workshop meetings organized in the field of data validation, starting in 2001 as Workshop on Wendelstein 7-X Data Validation, held in Greifswald, Germany. Because of the interest of many participants, their growing number, and the obvious need for a formal meeting, we decided to create a perennial, biennial technical meeting under the auspices of IAEA.

The International Scientific Committee agreed to give each meeting a special focus on a given topic, and this year the main focus was on soft X-ray measurement. Additionally, for this meeting, we asked for different contributions in selected main topics that are likely to be recurrent in future instances of the IAEA-TM:

1. error analysis and propagation (EAP)
2. probability theory and statistics (PTS)
3. parameter estimation, inverse problems, equilibrium reconstruction (PPR)
4. integrated data analysis (IDA)
5. data mining (DM)
6. pattern recognition and machine learning (PRL)
7. signal, image, and video processing (SIV)
8. real-time data analysis (RDA)
9. model selection and validation (MSV)
10. experimental design and synthetic diagnostics (EDD).

In this two-part special issue of *Fusion Science and Technology* (April 2016 and May 2016), you will find papers related to the above topics. I would like to thank all of the participants and speakers who took their time to give extremely high-level presentations and contribute an excellent collection of papers for this two-part special issue.

Finally, I invite you to the next occurrence of the IAEA-TM, which is being planned for Boston, Massachusetts, in 2017 and likely will be organized by Massachusetts Institute of Technology.

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